

Title (en)  
Fluidized bed jet mill and process for comminuting of silicon

Title (de)  
Wirbelschicht-Strahlmühle und Verfahren zum Zerkleinern von Silicium

Title (fr)  
Broyeur à jet à lit fluidisé et procédé de fragmentation de silicium

Publication  
**EP 1754539 B1 20080917 (DE)**

Application  
**EP 06118030 A 20060728**

Priority  
DE 102005039118 A 20050818

Abstract (en)  
[origin: EP1754539A1] The device for producing silicon seed particles, with a size of 50-1000  $\mu\text{m}$ , has vertically arranged jet chamber (8) with cylindrical cross-section, jet nozzle (4) arranged at the chamber, two zigzag counter flow-gravity separators (6) directly arranged at the jet chamber, and an inlet (6) for the silicon granulates. A grinding gas flow (1) is supplied into the jet chamber (8) via the jet nozzle. The jet chamber has a length of 2-8 sufficient for an expansion of grinding gas flow on the cross section of the jet chamber. The device for producing silicon seed particles with a size of 50-1000  $\mu\text{m}$ , has vertically arranged jet chamber (8) with cylindrical cross-section, jet nozzle (4) arranged at the chamber, two zigzag counter flow-gravity separators (6) directly arranged at the jet chamber, and an inlet (6) for the silicon granulates. A grinding gas flow (1) is supplied into the jet chamber (8) via the jet nozzle. The jet chamber has a length of 2-8 sufficient for an expansion of grinding gas flow on the cross section of the jet chamber, which has a flow cross-section of 20-30% smaller than the rectangular flow cross-section of the separator. One of the separators has larger rectangular flow cross-section than the other separator. The inlet of the silicon granulates with size of 300-5000  $\mu\text{m}$  takes place into the separator. A weighing unit is used to determine the weight of silicon particles in the jet chamber and the separator. The weight of silicon particles is regulated via a regulation unit for the dosage of the silicon granulates to obtain an optimal efficiency of the grinding process. An additional gas inlet for visible gas, is present in the inlet area of separator. Parts from an inner metallic covering with a coated inner wall, are contacted with the silicon particles. An inliner is installed into the parts provided with the coating, made of polycrystalline or monocrystalline silicon or quartz. The coating on the inner wall is made of silicon in mono- or polycrystalline form. An independent claim is included for a procedure for milling of silicon granulates to silicon seed particles by using the above device.

IPC 8 full level  
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CPC (source: EP US)  
**B02C 19/068** (2013.01 - EP US); **B02C 23/14** (2013.01 - EP US); **C01B 33/02** (2013.01 - EP US)

Cited by  
WO2018082789A1; CN108636571A; EP2423163A1; CN111701853A; CN108602070A; CN112473964A; US11759790B2; US8747794B2; WO2014080035A1; US11154870B2; WO2018082794A1; US11462734B2; EP3386638B1

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